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ABSTRACT

This small, qualitative study examined how interactive television educators go about teaching in electronically-mediated environments where students remain separated from them. Three interactive television instructors were interviewed, and 15 hours of field observation was conducted. Although the study's original goal was to yield prescriptions for how to teach in the interactive television classroom, three broad categories of limitations emerged. The first limitation was lack of spontaneity. Interactive television teaching tends to remain scripted and "canned." Depending on the delivery system used to transmit the class, instructors interviewed for this study found it difficult to spontaneously interject without disrupting the communication process. The second limitation was lack of relationship satisfaction. Instructors found it difficult to cultivate the intimacy found in traditional face-to-face classrooms. It was suggested that technology prevents students from seeing teachers at their best. The third limitation was lack of interaction. All the instructors struggled with lack of student responsiveness and interaction. "Hello, is anyone out there" was a common expression of the three instructors observed for the study. To overcome these limitations, findings suggest that spontaneous interaction can be more easily obtained by use of computers; that some face-to-face meetings should be built into the class schedule; and that a tenured distance learner be assigned to each remote location to serve as interaction coordinator and spokesperson for that site. (Contains two references.) (Author/CR)

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Teaching From a Distance: "Hello, Is Anyone Out There?"

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Abstract

This small, qualitative study examined how interactive television educators go about teaching in electronically-mediated environments where students remain separated from them. Three interactive television instructors were interviewed and fifteen hours of field observation was conducted. Although the study's original goal was to yield prescriptions for how to teach in the interactive television classroom, three broad categories of limitations emerged. The first limitation was lack of spontaneity. Interactive television teaching tends to remain scripted and "canned." Depending on the delivery system used to transmit the class, instructors interviewed for this study found it difficult to spontaneously interject without disrupting the communication process. The second limitation was lack of relationship satisfaction. Instructors found it difficult to cultivate the intimacy found in traditional face-to-face classrooms. It was suggested that technology prevents students from seeing teachers at their best. The third limitation was lack of interaction. All instructors struggled with lack of student responsiveness and interaction. "Hello, is anyone out there" was a common expression of the three instructors observed for this study. Suggestions for working through the limitations are offered.

Key Words: Distance Education, Interactive Television Instruction, Limitations, Spontaneity, Relationship Satisfaction, Interaction.

Teaching From a Distance: "Hello, Is Anyone Out There?"

More and more teachers are being asked to teach in nontraditional instructional settings where they have limited experience. One of these environments is teaching in an electronically mediated environment, such as interactive television, where students and teachers are separated in space. On many college and university campuses there is a push to develop extended learning programs that reach out to communities that may otherwise not have the opportunity for higher education. Many of these extended learning or distance education programs are being conducted using various telecommunication technologies including satellite and fiber-optic delivery systems that will be discussed below.

In partial support of these extended learning initiatives is research that suggests that there are minimal differences in student learning outcomes when comparing scores in the traditional classroom with those in the distance classroom (Verduin & Clark, 1991). A research question that has received less attention in the educational literature concerns the issue of teaching in an environment where students are separated in space and sometimes time. How "do" and "should" teachers teach when their lessons are being channeled and transmitted through fiber-optic or satellite technologies? What happens to the teacher's verbal and nonverbal messages when they are mediated? What happens to teacher/student interaction? How does a teacher regulate interaction in an environment where the verbal and nonverbal cues remain filtered or dulled?

I feel these various research questions remain important for a couple of reasons. Both of these reasons are embedded in or are yielded from what I consider to be my ethnographer's lens. One of my biases that makes up my lens or filter is my questioning of technology. I do not see *all* new technology as being good. Are we creating "virtual" classrooms because we "should" or because we "can?" Additionally, I question the research that suggests minimal differences exist between student learning outcomes in the traditional versus distance classrooms. I feel the more interesting research question

remains unanswered. How could a separation of teacher and student not alter or influence learning outcomes? Educational psychologists have been informing educators for years of teacher and instructional behaviors that have been shown to yield optimal learning.

Both of my reasons for asking the aforementioned research questions center on the quality of higher education. Assuming that there are minimal differences in learning outcomes despite the learning environment and knowing that school systems throughout the country are investing large sums of money in instructional technologies, should we not expect learning outcomes in the "virtual" classroom to exceed the traditional classroom? Why should we settle on a baseline that many consider to be substandard education? A corporate CEO would never settle for a baseline product after implementing his/her shop with the latest in technological improvements? Learning how to teach in an electronically mediated environment will hopefully yield not only higher learning outcomes, but also move distance educators into new pedagogical directions. In short, rather than trying to limit the technology by forcing it to replicate the traditional classroom model, which many consider to be mediocre, why not allow the technology to inform us on new ways to teach and create educational environments?

The second reason why I feel the research questions that I'm asking are important is because many ill prepared college professors are teaching at a distance using the fiber-optic and satellite delivery systems. Unfortunately, many college professors, although experts in their content areas, have never received any formal instruction on how to teach. From this study I learned that "effective" college professors are not always willing and wanting to teach in the mediated context because it prevents them from being their best. Additionally, some college professors end up teaching using the electronic medium, not because they are effective at teaching in the medium, but simply because their classes are a part of the extended learning schedule of classes. For these reasons, I was interested in discovering how distance educators teach in mediated environments where students and teachers remain separated.

In order to interpret and understand the voices of the distance educators, who were interviewed for this study, it is necessary to understand the mediums in which they work. Like an artist whose medium has certain strengths and limitations, distance educators also work in a variety of mediums each having strengths and limitations. Two telecommunication delivery systems that were observed in this study include satellite and fiber-optic/compressed video. In the satellite-delivered educational environment, the class is conducted in a television studio very similar to what you would expect to see in a studio that produces the evening news complete with a stage set including anchor desk and plastic plants. The studio classroom includes tables and chairs for students all framed with a series of lights, cameras, and monitors. During the actual production of a satellite-delivered class, remote students can see and hear both the teacher and the studio students, but the teacher and studio students can only hear the remote students. This type of delivery system is referred to as the two-way audio and one-way video delivery system.

Televisual instruction using fiber-optic technology or compressed video allows for more interaction and is referred to as the two-way audio and video delivery system. In the compressed video-delivered instructional environment, the studio resembles a closet. Unlike the satellite-delivered studio classroom that requires bright lights and a set of some type, the compressed-video studio classroom did not require the theatrics of the satellite-delivery system. In this classroom, two stationary "bank-lobby" security cameras were mounted—one to the ceiling and one next to the television monitor. Unlike the satellite classroom that requires a complete production crew of six, the fiber-optic classroom requires a single technician. Although this delivery system is touted as being more interactive and less expensive to produce because it allows for two-way audio and video transmission and is less labor intensive, the quality of the production and transmission is extremely poor.

Working within these instructional environments, a series of interviews and observations were conducted to collect data for this study. During the Spring semester of

1997, I was introduced to three distance educators after calling the extended learning office at West Virginia University. Steve is the only instructor who teaches with the satellite technology or the one-way video, two-way audio delivery system. Steve teaches special education courses to teachers who are pursuing their master's degrees in special education. Steve appears quiet and shy. His teacher communicator style remains monotonous and without the energy of the other two distance educators. His appearance and dress remain very informal and relaxed. Laurie teaches health policy to nurses who are pursing their master's degrees in nursing. Her teacher communicator style is energetic, encouraging, and her delivery remains articulate and clear. Her dress and appearance remain polished and professional. Like Laurie, Mary teaches graduate-level nursing courses to remote students who are pursing their master's degrees in nursing. Mary teaches courses in rural health. Her teacher communicator style sounds strict and rigid. During our interview we discussed her teaching style. She sees teaching as "tough love" and she mentioned at one point, "she pounds it into them." Her appearance is professional. To those who do not know her, her style would appear condescending and pedantic. To those who know her, the perceptions I believe are less negative, more palatable, and *perhaps* even effective.

In addition to interviewing these three educators, I observed each of their two-hour classes. These observations allowed me to not only observe the actual studio classroom environment and the student/teacher interaction, but also allowed for a behind-the-scenes production perspective. Again, in the satellite-delivered context, this included observing a producer, sound and visual technicians, and three camera operators. In the fiber-optic context, it included observing a single technician who made sure the audio and video links were functioning.

After spending approximately fifteen hours in the field and after reviewing the observational and interview data, I saw three themes emerging from the data. These three themes are not exhaustive nor are they exclusive. They remain fluid throughout this

paper. Although the focus of this study was to discover how one goes about teaching in an environment where students and teachers remain separated from each other, the data from the study yielded limitations rather than instructional prescriptions. All three distance educators remained receptive to interactive televisual instruction, however all three mentioned during their interviews how the medium limited their ability to teach in a way they would like to teach and present themselves. I have labeled these three themes as Spontaneity, Relationship Satisfaction, and Interaction. It is my hope that some instructional prescriptions can be yielded from these limitations.

Theme One: Spontaneity

The first theme that emerges from the data I have labeled "Spontaneity." I believe that most good teachers would agree that effective teachers are receptive to spontaneity. In other words, if a class gets off the immediate task as a result of some event or student/student or student/teacher conversation, effective teachers take advantage of these opportunities to create unplanned learning. In the interactive televisual medium, especially satellite instruction, there is little room for spontaneity. Because of time, production limitations, and the medium's inability to effectively capture and transfer synchronous two-way interaction, the environment remains sterile and the class remains "canned."

Within this theme of spontaneity, two general categories emerged from the data. The first category centers on how teaching in the televisual medium requires structure and advanced planning and the second category reveals how the interactive medium retards spontaneous communication and interaction. I would like to begin this discussion by recounting my observations of a satellite-delivered class being produced and conducted. For two consecutive Mondays, I became a member of the studio classroom for Special Education 328: Instructional Programming which was taught by Steve. Throughout these two evenings, I was invited to visit the production room that was located adjacent to the studio classroom. On one evening, I assisted with the actual

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production of this particular class that was being transmitted to 15 different locations throughout the state of West Virginia with close to 50-80 distance learners attending to the televisual message. All of these students were working toward their masters in some area of special education. My job was to work the switching board that controls which of the three camera shots are actually transmitted. The production room rather than the classroom is the center of learning with satellite-delivered instructional television. With a crew of three camera operators, a sound technician, a control-board operator, and the producer, the process of teaching becomes performance and production based. Rather than teaching a graduate-like seminar where spontaneous interaction can often times lead the class in unplanned directions and heated debates, televisual instruction that is delivered via satellite requires and demands planning and orchestration.

When Steve talks about preparing for class, he uses terms such as "show," "script," and "rehearsal." He is currently filling in for a professor who is on sabbatical so he is using her scripts. Each class is completely scripted with a 25 page document that contains the lecture materials, breakaway activities, production notes, and time markers. Because the University has rented only 110 minutes of satellite time for this particular three-credit class, the instructor and production crew must remain on track. The time markers are located in the right hand margins and inform Steve as to where he should be in the script at various times. The scripts are very structured and formatted. During both of my observations I noted the same format. The class opens with a preview of the evening's topics. Once completed, Steve introduces the first concept, followed by various definitions and examples. Then Steve introduces a breakaway activity that will allow students at the remote sites to work with the concept. After five minutes of breakaway, Steve will pull out student comments and feedback from various sites and wrap the concept up with a review. Then this complete cycle is repeated another four to five times during the 110 minutes. To close the class, Steve walks the students through a review of the three or four concepts introduced throughout the class and previews the next week's

class. The obvious advantage to this format is that students become familiar with the structure of the class, however Steve feels that students get bored with the routine. "The classes are always the same format and this bothers many students."

Because satellite-delivered instruction requires a complete production crew to capture, record, and transmit the class, scripts are required in order to manage the various crewmembers. When Steve previews the evening's class, character-generated visuals are displayed on the monitor. Character-generated visuals replace the traditional chalkboard in the televisual medium. These visuals are displayed on the monitor as Steve's voice walks students through a character-generated definition or through various bullet points that highlight or preview/review a specific concept. The visuals can also be superimposed over Steve's right shoulder. This production technique is called "over the shoulder" and is very similar to the graphic images that appear over the shoulder of Peter Jennings on the *ABC Evening News*.

The main point that I would like to make in regards to this discussion regarding the production aspects of satellite-delivered instruction is that it requires an instructor to remain committed to a script. The graphics and visuals do not just happen. They require preparation and planning for the entire crew. For a simple five second "over the shoulder" visual to appear, the graphic needs to be character generated and the producer needs a certain camera angle that places Steve in the right half of the frame with enough room in the left half of the frame to insert the visual. This type of orchestration adds a nice production value to the class, however it quells spontaneity. Additionally, it requires lead-time for the production crew. Steve mentioned during the interview when I asked him to walk me through a typical week, that he and his producer will review the script on Tuesday for a class that is being held on the following Monday. This type of lead time allows the production team to enhance the production value of the class, however it remains less student-centered and prevents an instructor from altering the script to capitalize on student comments, current events, etc.

The second category that I feel illuminates how interactive televisual instruction reduces spontaneity is through a retardation of communication and interaction. Laurie teaches Nursing 326: Health Policy, Issues, and Ethics using compressed video technology. Compressed video transfers the audio and visual through the telephone line rather than having the message "uplinked" or beamed to a satellite. Although the medium has been touted as the cure to distance education, the technology remains limited in its abilities to replicate face-to-face interaction. Like the artist's medium, this medium alters instruction because of its various advantages and disadvantages. The obvious advantage to compressed video is that it does not require the "expensive" production crew and it allows for more interaction. The studio classroom contains two stationary cameras that resemble the close-circuit cameras you would find in a bank lobby. Unfortunately, the image is bank-lobby-security-camera quality. With this medium, there are no producers or sound, camera, or switch board operators who are telling a story through images. Production values remain minimal. The major advantage to using this type of technology is that is allows for two-way audio and visual interaction meaning that the teacher and students throughout the state can both see and hear each other as the conversation unfolds. The major disadvantage to this medium is that the audio link remains weak and the visual images are "dulled" coupled with the fact that audio and visual are rarely synchronized. Additionally, there is a slight delay in the audio transmission that prevents a type of quick and immediate interaction that most teachers and students are familiar with in the traditional classroom.

Laurie discusses how this delay in audio transmission retards spontaneity in the classroom.

> "I miss the spontaneity that you get in the traditional classroom. It's very distracting for example tonight often times the language is like watching an old film, you know, the voice components and the television monitor are not in sync. Many things happen in terms of the volume level going up and down. You can't

have anything really spontaneous because it won't get picked-up. So, in other words, students within each little classroom (at the various remote sites) can have spontaneous things happening, laughter, you know, side comments. These side conversations could add or trigger another student to think of something that they might not otherwise have told us. The ability for me to facilitate a conversation between students is lost. If I interject while a student is talking, it would be so distracting in this medium because it would have meant that I would have had to cut them off, wait for the timing to come to me so that my speaker voice would be picked-up and then the comment to them. So you can't do it. You totally lose it. I have to wait until they're finished and at that point, you lose the spontaneity of the conversation. It becomes too canned."

This response was made during our interview that followed my observation of her class. During this evening's class, students from throughout the state were giving individual presentations. Laurie indicated how frustrating it was for her not to be able to interject a comment in order to help focus some of her students who were getting off track or to highlight what she thought were salient ideas and ideas that were lost in the transmission to the other sites throughout the state. With synchronous communication there is no delay in the transmission of the message and from experience we know when and how to insert a quick comment for clarification or for direction. When the timing is not synchronous, there is no way to regulate the conversation. If inappropriately interjected, then the two individuals end up stepping on each others words and usually the small clarifying comment is never captured. If captured, it is usually disruptive to the flow of communication and therefore more time is needed in order to clarify the clarifying comment. Laurie mentioned, that "because of the medium, there is no use or value in trying to interject a comment."

These two categories of illustrations including the satellite production focus and compressed video's inability to capture real-time synchronous interaction reveal how

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interactive televisual instruction does not favor spontaneity and instead encourages structure and scripting resulting in a class that appears "canned." The purpose of this research paper is to inform distance educators on how to teach in a medium where students and teachers are separated in space and time. The above descriptions illuminate what two distance educators considered problematic. Both Steve and Laurie are receptive to teaching in the mediated environment, however they remain frustrated by the medium's ability to control their teaching. Mary, another nursing instructor who teaches in the compressed video medium, mentioned during her interview that teaching in a mediated environment demands "hyper-organization." "Teaching over the television is not a place where a teacher can wing it."

Theme Two: Relationship Satisfaction

The second theme that emerges from the data I have labeled "Relationship Satisfaction." This theme focuses on how the instructors see mediated instruction limiting the interpersonal development and satisfaction of the student/teacher relationship. I see this particular theme as being a considerable limitation for those who volunteer to teach in this type of mediated instructional environment. Although the distance educators who were interviewed for this study did not necessarily offer instructional or interpersonal prescriptions on how to meet this relational limitation, I feel advance warning that the student/teacher relationship is going to be altered is a first step in working through the limitation.

Three categories of coded observational and interview data illustrate this relationship satisfaction theme. The first category reveals the medium's inability to convey and transfer the teacher's personality and expertise. The second category touches on how the medium makes it more difficult to appear as a "real" person rather than a "talking head." And the third category illustrates the importance of building into the course face-to-face meetings in order to enhance and facilitate student/teacher relationship development and ultimately satisfaction.

The first categorical sub-theme that addresses the limitations of student/teacher relationship development and satisfaction in this mediated instructional context is the medium's inability to convey the teacher's personality and expertise. I believe that most effective educators would agree that their main source of satisfaction comes not from their salaries, but from the relationships they develop with their students. My mentor once told me that if you do your best, your students will respond to you and it will be this response that will feed you and make you even better. But what happens when the instructional medium you are working in does not allow you to be your best? Laurie remains optimistic and receptive to instructional technology, however out of our one-hour interview, it was this idea of the medium not allowing her to be her best that remained most salient. Laurie mentioned during our interview that she feels that she is a good teacher, but the television does not convey or transfer her ability to teach and her knowledge. She said it is frustrating to walk away from the class feeling as though the students at remote locations were not seeing her at her best. She mentioned during our interview, "I think they loose my personality with the television. . . and they lose my energy. And I miss their energy. It's frustrating."

Laurie mentioned that she is in higher education and not in the court room because she loves working with students. "I have a passion for the material I teach. I mean that's why I'm here and not in law." She feels that the medium fails to transfer her love and energy for the material she teaches and the medium inhibits relationship formation.

> "Students lose in this type of educational setting. And you know there is something to be said about a society that's all on the telephone, television, or computer. I don't think you can replace the relationship the students have with a faculty member when they actually get to know them."

Laurie made the next comment after a discussion of my relationship with my graduate faculty mentor.

> "The relationship you have with Steve is invaluable. You enjoy learning from him. That is the type of relationship that graduate students should be having with their faculty members. I mean the students in Charleston don't have that because they never will be able to really say that they know me. . . I mean will they be comfortable in calling me up and asking me for advice about changing a job, or to listen to an idea that they have, or asking me to review an article that they have written?"

When discussing this lack of student/teacher relationship, Laurie mentioned that when the Chair or Dean of a department needs a teacher to teach in this medium, they think of their best teachers.

> "I think you need to have your best teachers doing it but I also think that they're going to be the ones who are most resistant because they're going to miss the students like I miss the students and they are also going to learn that the television doesn't allow you to be your best."

Steve echoed many of these relational limitations by mentioning that teaching in a mediated context favors the teacher as a "talking head" or "celebrity" rather than teacher as a "real" person, the second categorical sub-theme. During my observations of Steve's teaching, I noticed that Steve's attention was focused on his scripts. It was obvious that the scripted instructional materials were written by the teacher that Steve was filling in for rather than himself. Instead of talking "with" his students, he was talking "at" them. Although Steve feels that it is important for students to see him as a "real" person, which will be discussed in subsequent paragraphs, the medium favors scripted and canned behaviors that remain distant and impersonal. The following excerpt is taken from my observational notes which were couched in terms of the advice I would give Steve in order to make his teaching more "real" and less "canned."

> I would encourage Steve to use more humor. It appears that he wants to, but he appears to restrain himself. I would suspect that Steve has some communication

apprehension in this teaching environment. I would also encourage Steve to use more self-disclosure and to share from his experiences. Students need to get to know him. If they know him, his nervousness will be ignored by them. Also, it appears that Steve's communication with his students changes if he knows them. When he addressed one of his students in Clarksburg, you could tell immediately that he knew her. His voice warmed and he talked with her instead of at her. More of his personality is revealed through his communication when he is talking to someone he has experience with. I would encourage Steve to banter and engage in more humor with some of these students. They seem to be a good group and are ripe for this type of playful, yet constructive relational communication. When he engages in humor or when he is talking about himself, he humanizes himself. This shows in his face and I believe his students are receptive to this.

Steve recounted a story when he was in primary and secondary school. He mentioned that he remembered not knowing anything about his teachers and their lives outside of the school environment. When referring to his teachers he said, "you know, they might as well have been robots for all we knew. We never knew where they lived or who lived with them." I agreed with him and mentioned that as a middle school student I used to make up stories about my teachers' lives in the absence of actual information. Steve mentioned that his teachers were never real people and "I needed to have that in order to learn from them." Steve said that the television favors impersonalness. According to Steve, teaching over satellite favors teacher talk and content rather than student talk and the relational aspects of teaching. Steve mentioned on a couple of occasions, "I wonder what my students think of me" and "I hope they like me." I feel these two comments reveal the importance teachers place on relationships with students and the medium's inability to facilitate such relationships.

The third and final categorical sub-theme that supports the Relationship Satisfaction theme is the importance of building into the distance course some face-to-

face communication. All three distance educators mentioned during their interviews this particular idea which emerged without any type of an interview prompt. It appears that all three educators have access to only two hours of "air time" per week for their three-credit classes. In order to make up the third hour they build in class times on weekends to make up the hours. This limitation of "air time" has become an advantage to both teachers and students who teach and learn in this medium. Mary mentioned that the Saturday sessions allow her to not only meet her students face to face, but it also gives her students the opportunity to meet the faces behind the voices. Laurie mentioned that even though you see them on the television monitor on a weekly basis, it is still difficult to place them when you see them in person. She mentioned that the television has a tendency to dull and wash out all facial features, so it becomes difficult to identify them in person. "I need to hear their voices first, then I can place the face with the voice." According to these distance educators, this face-to-face contact assists with humanizing the distance educational experience.

The above data suggest not only the medium's limitations in terms of student/teacher relationship formation, but also the importance of these relationships to teacher satisfaction. Much of the distance education literature has focused on student satisfaction rather than teacher satisfaction. It may be worthwhile to find ways to counter some of these relational limitations in order to increase teacher satisfaction, thus increasing student satisfaction with distance learning.

Theme Three: Interaction

The third and final theme to emerge from this study I have labeled Interaction. Without a doubt, this theme dominated all interviews. This theme also dominates the majority of empirical research on distance education. The distance educators and researchers agree that more interaction is better. The problem remains, however, that even though it is called interactive television, the medium does not make it easy to interact. As previously mentioned, the medium does not encourage spontaneity. Instead it

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favors planned and scripted communication. In this theme of Interaction, the dominant categorical sub-themes to emerge from the data are the notions of planning, managing, and "doing" the interaction. In the mediated instructional environment, interaction does not just happen. If interaction is going to occur, it needs to be planned, managed, and the instructors need to be informed of the technologies' limitations in terms of facilitating interaction and encouraged to find ways to overcome some of these limitations.

Working in the production room of Steve's satellite-delivered Special Education course made me aware of how interaction is planned. In order for students to interact with Steve and other students in this mediated context that allows for two-way audio and only one-way video, the students have to call a toll free number and then their calls are dispatched to the phone bridge. Once the student's call is dispatched to the phone bridge, the producer sends a message to Steve's "bug-in-the-ear" (which is an ear piece that allows Steve to receive production cues) that "Kathy is on the line from Beckley." Then Steve introduces the student by saying "We have Kathy on the line from Beckley." While Kathy is talking to Steve, the producer will place her name and her still photo in the lower half of the television monitor in order to simulate a type of face-to-face interaction. This is done to make-up for the Satellite's inability to broadcast two-way video. Throughout the evening's class, Steve would prep two of the approximately 40 sites to call in since he was going to be interacting with them in the next unit or sequence of the class. When the sequence was complete, he would prep another two sites to contact the phone bridge.

Interaction is also managed in the mediated instructional context. All three distance educators mentioned during their interviews that they try to keep track of who they interacted with and who they engaged. All three instructors mentioned that they go into every class with a roster that includes students' names and locations. They also mentioned the importance of knowing and using students' names and locations by

memory. Mary and Steve expressed that it is easy for students to hide. When discussing her interaction with her students, Mary indicated the following.

> "I try to get around to all of them. I have a list in front of me and sometimes I get to some more than others. When I go home after class I try to think who did I talk to more this evening and then next class I try to talk to others more. I try to even it out."

Another idea that is included in this category of managing is the need to have a tenured distance learner at every location who is responsible for informing the instructor of any audio and/or visual difficulties and for managing camera angles. (A tenured learner is defined as any student who has had at least one other course via television.) I first observed this with Steve's class. Whenever he would ask a remote site a question, there always seemed to be a person at that site who would serve as spokesperson for the group. Laurie actually formalized this role by making the tenured distance learner responsible for trouble-shooting technical glitches, serving as informant if the audio or visual link was interrupted, and operator of the joy-stick that manipulates camera angles and close-ups at each of the remote locations. This type of managing where the instructor assigns roles seems to ease and facilitate the mediated interaction.

All of the distance educators agree that there is a technique and/or a skill for facilitating or "doing" interaction with students. The one technique that remained consistent across the three interviews was the notion of "pulling them into" the conversation or "bringing them back into" the conversation. There is a feeling that if the instructors don't work at the interaction, they will lose the student. All three distance educators used similar language to describe this feeling of losing their students to the black hole of the atmosphere. Laurie mentioned,

> "I can bring them back, you know, they know exactly where I am in the outline. . . . Like I said, the only thing that makes my class work is I'm able to go out there

and bring them in. . . And then I pull Christy in. Usually I try to get her at the beginning or the end so not ever to forget her."

Mary indicated a similar interactional style with this comment.

"If I were to just say someone out there talk to me, nothing would happen. I call on them. But I tell them straight off that this is what we will work through and we talk about it. I stay with them on a question. I do not let them go. Another thing that I do is stay with them on a question. That is a bit intimidating to them, but after a while they get used to the process because they know that I'm not there to make or belittle them. It is always with much respect. What they say is always so valuable."

Another technique to facilitating interaction is to work through the absence of nonverbal responsiveness cues that teachers in the traditional face-to-face classroom use to regulate the flow of interaction. Although one of the main advantages of using the compressed video technology is its ability to transmit two-way audio and visual messages, the visual cues remain dulled and blurred. Many of the visual shots remain at a distance where most of the nonverbal cues are filtered out. Laurie commented during the interview that she feels as though she needs a new pair of eye glasses when she watches the monitors.

"Had I not met them in person, I would never be able to pick them out of a crowd. I can't see any of their features or the ways that they react. Now that I have met them, it is easier for me to pick them out of a class on the monitor."

Mary stressed the importance of developing a sense of hearing when you teach in this medium. "You have to listen to your students. Listening helps you see your students." During my observations of Mary's class, I recorded the following notes which illuminate some of the frustration Mary was experiencing as a result of not being able to see her students.

There were times when Mary would ask whether or not her students understood what she was talking about. She needed some type of cue that she was on track. She was needing some feedback. She looked at a television monitor of the Charleston group and again their heads were in their books. Or this was the impression. It was as though Mary never asked a question. The Charleston site did not know (or I don't think they knew) that their presence was displayed on the monitor in the studio classroom. Once a remote site talks, the camera automatically picks up this site and broadcast it to the studio. Mary appeared agitated when her message was not responded to. The same type of non-response occurred at the end of her class when she was trying to summarize the material and synthesize it in an intellectual manner and she had trouble making her point. She asked, "Can anyone help me make my point?" Again, silence. These moments were awkward. From the studio, it appears that no one is paying attention. It seemed to frustrate her. On occasion, Mary would ask "Joanne from Lewisburg, come to me Joanne. Joanne, come to me." It sounded like Mother was calling her daughter. Mary wanted Joanne to help her make her point and wanted her to talk so the camera would pick up her visual image. "Let's go to Charleston. Talk to me people, I need to see your faces. Hello, is anyone out there?"

In order to facilitate interaction in the interactive televisual medium, it is necessary to not only plan and manage the interaction, but also to anticipate and work through the absence of nonverbal cues that we take for granted in face-to-face interaction. The literature explains this effect as the cues-filtered-out effect (Culnan & Markus, 1987). The research has shown that the interaction between people is altered as a result of dulled or filtered-out-cues that are needed to regulate the flow of communication, form impressions of the partner, and gather social context cues that are needed in order to interact appropriately. I feel it is important for distance educators to be informed as to how their interaction and their relationships with students will be altered

as a result of teaching in an electronic medium where teachers and students are separated. Knowing what to expect may help future distance educators find creative ways to compensate for these interactional deficiencies.

Another instructional implication for facilitating interaction comes from my observational notes of Steve's satellite-delivered Special Education class. Again, these notes were couched in terms of the advice I would give future educators teaching in an electronically mediated environment.

> There is a need to teach distance educators an "interactive protocol." In order to get students to want to respond or call in with a question, teachers need to remain extremely encouraging. Once student is on air, teacher needs to greet student by asking student for name and location. Once this is completed, teacher needs to ask student to respond. Teacher needs to follow up with student to insure response and appropriate meaning. Students are apprehensive talking on the air, so teachers need to offer encouraging vocal cues. It is my guess that many students experience a level of anxiety that prevents them from thinking, speaking, and responding in a clear and cogent manner. Encouraging vocal cues will give them support and time to think through a comment. A teacher can always say, "Let's think through this together." Once student is completed, teacher can ask if there are any students in that location who would like to add anything to the discussion. Once complete, students need to be thanked for their participation.

Discussion

The purpose of this study was to examine the teaching process in the interactive televisual mediated environment with the hope of offering prescriptions to future distance educators. What emerged from the data were not necessarily prescriptions on how to teach in the televisual context, but an identification of some of the delivery systems' limitations. Laurie mentioned that teaching in this medium frustrates her because she doesn't feel the medium allows her to do her best work. In other words, the

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medium does not allow students to see her at her best. On a couple of occasions, Laurie mentioned that her remote students do not see or feel her energy and vice-versa. I feel the instructional implications that can be yielded from this study center on how to transgress some of the identified limitations.

The first limitation focused on the medium's inability to allow for spontaneous interaction. In order for the quality of instruction and teacher satisfaction to increase, it appears that distance educators and technicians are going to need to work in concert in order to overcome limitations to spontaneous interaction. Without the technological advancements needed to enhance the delivery systems, it may be necessary for distance educators to find other avenues for spontaneous interaction such as the computer rather than relying on the televisual medium to replicate the interaction that most educators are familiar with in the traditional classroom. It seems that both the satellite and fiber-optic delivery systems discourage spontaneous and instant interaction and encourage more scripted forms of interaction. The televisual medium remains an effective means of transmitting information, however it appears we need to look beyond the televisual context for other mediums that will allow for spontaneity of expression that some educators feel is critical to higher education.

The second limitation centered on developing the student/teacher relationship. Both Steve and Laurie mentioned that the medium favors teaching as a performance rather than teaching as a relationship. In other words, it appears that it is easy for a teacher to become a one-dimensional "talking head" rather than a multi-dimensional thinking and feeling person. All three distance educators expressed the importance of building into the class schedule some face-to-face meetings. This appears beneficial for both the development of both student/teacher relationships and student/student relationships. Adapting teacher communicator style is another way of making the teacher appear more authentic and less of a "talking head" personality. As I captured in my observational notes, satellite-delivered instruction encourages a type of "canned" or

scripted type of instruction where the instructors appear distant and removed from students. To increase perceptions of immediacy, I would encourage distance educators to keep the communication conversational, and to use appropriate humor and self-disclosure.

The third and final limitation centered on interaction. This limitation yielded the three instructional implications of planning, managing, and doing or facilitating interaction. I learned from these three educators that interaction does not just happen as it does in some traditional classrooms. Instead, the instructor needs to plan for the interaction by working with the necessary technical support personnel especially those working with the satellite delivery system. The interaction also needs to be managed. The instructors recommend assigning a tenured distance learner at each remote location to serve as interaction coordinator and spokesperson for that particular site. Learning how to facilitate the interaction remains the final instructional implication yielded from this study. I recommend in my field notes a type of interaction protocol that may assist with the facilitation of the interaction. What remains more important is informing distance educators of how the technology or medium has a tendency to dull or filter out nonverbal cues that are needed in order to regulate the flow of communication. Distance educators need to be trained on how to facilitate interaction in the absence of nonverbal cues. One implication may be to improve listening skills. Instead of focusing on a student's facial expression to see if the message was received, teachers may need to pay closer attention to audio cues that stimulate similar meanings.

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